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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/645,533
Filing Date: August 22, 2003
Appellant(s): SHINOHARA, HIRONOBU

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Oblon, Spivak, McClelland, Maier & Neustadt, P.C.
For Appellant

SUPPLEMENTAL EXAMINER'S ANSWER

This is in response to the appeal brief filed 26 May 2006 appealing from the Office action mailed 14 April 2005. It is substantively identical to the Examiner's Answer mailed 31 October 2005 but includes a corrected Section (8) as required by the remand mailed 23 February 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,674,840	Bennett	06-1987
5,334,424	Hani et al.	08-1994
6,191,837	Fujimaki et al.	02-2001
6,203,727	Babinec et al.	03-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-9 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaki et al. (U.S. Patent 6,191,837) in view of Bennett (U.S. Patent 4,674,840).

Fujimaki et al. teach a liquid crystal display comprising a substrate with an electroconductive film provided on the substrate (column 5, line 66-column 6, line 13). The electroconductive film may comprise a polythiophene (column 6, lines 40-55). A polarizing plate may be disposed on one side of the electroconductive film (column 6, lines 28-30). The electroconductive film has a surface resistivity of 100 kΩ/square, i.e. 10^5 Ω/square (column 10, lines 8-11). The material of the electroconductive film further comprises an oxidant, which reads on the dopant of instant claim 3 (column 11, lines 4-11). The thickness of the electroconductive film is from 100 Å to 1 μm, i.e. less than 3 μm (column 11, lines 23-27). The material of the electroconductive film may comprise an organic binder (column 11, lines 28-35). Furthermore, a hard coat and an antiglare layer may be applied (column 13, lines 23-30). The electroconducitve film on the substrate acts as a protective film because it protects the display (which includes a polarizing plate) from the effects of static electricity..

Fujimaki et al. are silent as to the visible light transmission of the electroconductive film. However, the film of Fujimaki et al. should intrinsically possess a visible light transmission of 78% or more since it is composed of the same material as the instant conductive polymer, is formed to the same thickness, and is designed to be optically transparent since it is used as in a liquid crystal display.

Fujimaki et al. do not teach the use of an acetyl cellulose material as the transparent substrate.

Bennett teaches the use of a polymer such as cellulose acetate or cellulose acetate butyrate (i.e. acetyl cellulose materials) as a substrate for liquid crystal displays (column 3, lines 3-17). Substrates formed from such polymers facilitate handling and manufacture of the display device (column 3, lines 8-12).

The Examiner takes the position that one of ordinary skill in the art would be motivated to use the cellulose acetate or cellulose acetate butyrate polymer of Bennett as the substrate of Fujimaki et al. to facilitate handling and manufacture of the resulting display device.

Claims 1-9 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaki et al. (U.S. Patent 6,191,837) in view of Hani et al. (U.S. Patent 5,334,424).

Fujimaki et al. teach a liquid crystal display comprising first and second substrates with electroconductive films provided on one or both of the substrates (column 5, line 66-column 6, line 13). The electroconductive film may comprise a polythiophene (column 6, lines 40-55). a polarizing plate may be disposed on one side of the electroconductive film (column 6, lines 28-30). The electroconductive film has a surface resistivity of 100 kΩ/square, i.e. 10^5 Ω/square

(column 10, lines 8-11). The material of the electroconductive film further comprises an oxidant, which reads on the dopant of instant claim 3 (column 11, lines 4-11). The thickness of the electroconductive film is from 100 Å to 1 μm, i.e. less than 3 μm (column 11, lines 23-27). The material of the electroconductive film may comprise an organic binder (column 11, lines 28-35). Furthermore, a hard coat and an antiglare layer may be applied (column 13, lines 23-30). The electroconducitve film on the substrate acts as a protective film because it protects the display (which includes a polarizing plate) from the effects of static electricity.

Fujimaki et al. are silent as to the visible light transmission of the electroconductive film. However, the film of Fujimaki et al. should intrinsically possess a visible light transmission of 78% or more since it is composed of the same material as the instant conductive polymer, is formed to the same thickness, and is designed to be optically transparent since it is used as in a liquid crystal display.

Fujimaki et al. do not teach the use of a norbornene material as the transparent substrate. In the embodiments of the Examples, glass is used as the substrate.

Hani et al. teach a norbornene resin for use as a substrate in liquid crystal displays which is excellent in many areas including transparency, processability, strength, flexibility, and resistance to heat, moisture, water, and chemicals (column 2, lines 5-12). The norbornene resin substrate is presented as an improvement over conventional glass substrates, which are apt to be broken when thin and tend to be too heavy when the thickness is increased (column 1, lines 29-35).

The Examiner takes the position that one of ordinary skill in the art would be motivated to use the norbornene resin of Hani et al. for the substrate of Fujimaki et al. to yield a product

with improved transparency, strength, flexibility, and resistance to heat, moisture, water, and chemicals that would not have the problems associated with glass substrates.

Claim 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaki et al. (U.S. Patent 6,191,837) in view of Hani et al. (U.S. Patent 5,334,424) as applied to claim 3 above, and further in view of Babinec et al. (U.S. Patent 6,203,727).

Fujimaki et al. taken in view of Hani et al. teach all the limitations of claim 21, as outlined above, except for the use of a polystyrene comprising sulfur as a dopant. However, Fujimaki et al. do teach the use of oxidants, such as an organic acid or Fe(III) salts (column 11, lines 4-11).

Babinec et al. is directed to electrically conductive polymers that may be used as electrically conductive coatings or in antistatic applications (column 2, lines 1-12). The polymers possess excellent conductivity, thermal stability and good compatibility with matrix polymers (e.g. binder) by using a combination of a low molecular weight dopant and a high molecular weight dopant (column 1, line 63-column 2, line 1). In the embodiment of Example 5, Babinec et al. illustrate a polythiophene doped with polystyrene sulfonic acid and either $FeCl_3$ (an Fe(III) salt) or hydroxybenzene sulfonic acid (an organic salt).

The Examiner takes the position that one skilled in the art would be motivated to use a binary oxidant system, such as polystyrene sulfonic acid in conjunction with an Fe(III) salt or organic acid, with the polythiophene of Fujimaki et al. because Babinec et al. teach that the combination of low and high molecular weight dopants improves the thermal stability and compatibility with matrix polymers of the resulting material.

Claim 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimaki et al. (U.S. Patent 6,191,837) in view of Bennett (U.S. Patent 4,674,840) as applied to claim 3 above, and further in view of Babinec et al. (U.S. Patent 6,203,727).

Fujimaki et al. taken in view of Bennett teach all the limitations of claim 21, as outlined above, except for the use of a polystyrene comprising sulfur as a dopant. However, Fujimaki et al. do teach the use of oxidants, such as an organic acid or Fe(III) salts (column 11, lines 4-11).

Babinec et al. is directed to electrically conductive polymers that may be used as electrically conductive coatings or in antistatic applications (column 2, lines 1-12). The polymers possess excellent conductivity, thermal stability and good compatibility with matrix polymers (e.g. binder) by using a combination of a low molecular weight dopant and a high molecular weight dopant (column 1, line 63-column 2, line 1). In the embodiment of Example 5, Babinec et al. illustrate a polythiophene doped with polystyrene sulfonic acid and either $FeCl_3$ (an Fe(III) salt) or hydroxybenzene sulfonic acid (an organic salt).

The Examiner takes the position that one skilled in the art would be motivated to use a binary oxidant system, such as polystyrene sulfonic acid in conjunction with an Fe(III) salt or organic acid, with the polythiophene of Fujimaki et al. because Babinec et al. teach that the combination of low and high molecular weight dopants improves the thermal stability and compatibility with matrix polymers of the resulting material.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. While the disclosure supports dopants comprising polymers styrenesulfonic acid or styrenesulfonic acid alkali salts, no support could be found in the disclosure as originally filed for a dopant of polystyrene comprising sulfur. The Examiner takes the position that the inventors did not have in their possession the concept of using polystyrene containing sulfur as a dopant when the sulfur is present as anything but a sulfonic acid moiety. However, claim 21 encompasses all polystyrene containing sulfur, not just polymers of a styrenesulfonic acid or styrenesulfonic acid alkali salt.

(10) Response to Argument

The Appellants argue that the combination of the transparent substrate and organic conductive layer of Fujimaki is not a protective film for a polarizing plate. With respect to the embodiment shown in Figure 2 of Fujimaki, the Appellants argue that this embodiment does not apply since claim 1 requires the conductive polymer to be adhered to the surface of the polymer film. With respect to the embodiment of Figure 1(b), the Appellants argue that this arrangement cannot protect the polarizing plate from water absorption.

In response, the Examiner notes that the language of claim 1 requiring the conductive polymer to be adhered to the surface of the polymer film is not a requirement that the conductive polymer be in direct contact with the polymer film. Rather, the limitation merely requires the

conductive polymer to be adhered or bonded to a surface of the polymer film, which would include embodiments with intervening layers such as the embodiment shown in Figure 2 of Fujimaki. Furthermore, the Examiner notes that the claimed protective film is not required to provide any particular degree of protection from water absorption. That the organic conductive film of Fujimaki provides protection from the effects of static electricity to the display as a whole (and therefore to the individual components of the display which include a polarizing plate) appears to meet the limitation of a "protective film," particularly in view of the Appellants disclosure that their protective film is designed to provide an antistatic function. Therefore, the question as to whether or not the organic conductive layer of Fujimaki as shown in Figures 1(b) and/or Figure 2 provides protection against water absorption is believed to be irrelevant since the claims as presented do not require any degree of protection against water absorption. Finally, the limitation that the protective film is "for a polarizing plate" is merely an intended use of the film. As such the "for a polarizing plate" limitation is believed to be met if the assembly of Fujimaki is able to function as a protective film for a polarizing plate regardless of the manner in which Fujimaki use their assembly. Because the organic conductive layer of Fujimaki is made of the same material (polythiophene) having a thickness (100 Å to 1 μm) and conductivity (10^5 Ω/square) within the claimed ranges, it is believed that the organic conductive layer of Fujimaki would be able to function as a protective film for a polarizing plate.

The Appellants also argue that the Office's position is based on the functional equivalent of the transparent substrates. However, the Examiner notes that the motivation for combining the references goes beyond a substitution of functionally equivalent materials. As outlined above in section (9) and in the action mailed 14 April 2005, both Bennett and Hani provide positive

motivation for using an acetyl cellulose material or norbornene resin, respectively, to form a transparent substrate in a liquid crystal display. That Fujimaki, Hani, and Bennett all use the same or similar terminology when discussing their respective substrates is an indication that the references are analogous prior art and that the substrates are used in an analogous fashion. However, Bennett provides explicit motivation for using an acetyl cellulose material as the transparent substrate since substrates formed from such polymers facilitate handling and manufacture of the display device. Likewise Hani teach the benefit of using a norbornene resin as the transparent substrate in a liquid crystal display, particularly as a replacement for conventional glass substrates.

The Appellants note that the present invention is directed to a protective film for a polarizing plate in contrast to the cited references which are concerned with a polarizing plate itself or a liquid crystal substrate having formed thereon a conductive electrode. As such, the Appellants argue that the usage of the present invention and the cited references are quite different.

In response, the Examiner notes that the film of Fujimaki does function as a protective film for a polarizing plate since it protects the entire liquid crystal display (and therefore all the components of the display including the polarizing plate) from the effects of static electricity. The Examiner further notes that the language "for a polarizing plate" is an intended use of the claimed protective film and that the film of Fujimaki, regardless of the manner in which it is used by Fujimaki, would be capable of functioning as a protective film for a polarizing plate because the organic conductive layer of Fujimaki is made of the same material (polythiophene) having a thickness (100 Å to 1 μm) and conductivity (10^5 Ω/square) within the claimed ranges.

Regarding the rejection of claim 21 under 35 U.S.C. 112, first paragraph, the Appellants argue that a dopant is disclosed on page 5, lines 10-20 of the specification which may be used alone or as mixtures of two or more. This passage is cited as providing adequate support for the limitation of a polystyrene comprising sulfur.

In response, the Examiner notes that the cited passage describes only three polystyrenes comprising sulfur: polystyrenesulfonic acid alkali salt copolymer, polystyrenesulfonic acid anion, and styrenesulfonic acid anion copolymer. Each of these polystyrene comprise the sulfur as part of a sulfonic acid moiety. All the other sulfur containing compounds disclosed are either based on monomeric styrene (styrene sulfonic acid) or non-polymeric sulfonate compounds. The Examiner contends that there is no support in the disclosure as originally filed for the use of sulfur in any form other than in the form of a sulfonate, nor is there any support for the use of polystyrene comprising sulfur in any form other than as sulfonic acid moiety. In the opinion of the Examiner, the disclosure of a mixture of dopants does not remedy this deficiency since a physical mixture of a polystyrene and a sulfur containing compound is not a polystyrene comprising sulfur.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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